REPORT OF THE UTILITIES DEPARTMENT

of

THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

DOCKET NO. 95-006-E

DUKE POWER COMPANY

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INDEX OF FUEL REPORT

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DUKE POWER COMPANY

REPORT OF FUEL ADJUSTMENT ANALYSIS

## Scope of Examination

The Commission's Utilities Department Staff analyzed the Company's procedures and practices pertaining to its fuel related operations. Staff's examination consisted of the following:

1) Review of the Company's monthly fuel reports including:
   a) Power Plant Performance Data Reports
   b) Major Unit Outage Reports
   c) Generation Mix
   d) Generation Statistics
   e) Retail Comparison of MWH Sales
   f) Retail Comparison of Fuel Costs
2) On-site inspection of the Company's coal quality sampling technique.
3) Review of the Company's methodology used to estimate fuel costs.
4) Review of the Company's currently approved Adjustment for Fuel Costs Tariff.
5) History of Cumulative Recovery Account
6) Calculation of fuel costs to be included in the base rates December 1995 through May 1996.

**REVIEW OF COMPANY'S MONTHLY FUEL REPORTS**

Duke Power Company (the Company) files with this Commission monthly reports detailing power plant performance, major unit outages, generation mix and other reports which provide the Staff pertinent data on which to evaluate the Company's fuel purchases and usage.

The Power Plant Performance Data Report Summary for fossil and nuclear plants is shown on **Exhibit No. 1.** It includes a listing of the individual units with their capacity factors and equivalent availability factors for each month in the period. These factors are expressed as percentages. These percentages are a useful index which can highlight or identify problems or unusual occurrences.

The Company's Nuclear Unit Outage Report, **Exhibit No. 2A** considers each outage experienced by a unit, giving the inclusive dates of the outage, hours down, type outage (scheduled or forced), the reason for the outage and corrective action taken. This information covers the period being considered in this proceeding. Staff compiled this data through a review of Company documents, NRC filings and interviews with Company personnel.

The Company's Base Load Fossil Unit Outage Report, **Exhibit No. 2B** shows each outage of the base load fossil fired plants of 100 hours or more giving the month of the outage, hours down, type outage, the reason for the outage and corrective action taken. This information covers the period being considered in this proceeding.

Staff reviewed and compiled a percentage Generation Mix statistic sheet for the Company's fossil, nuclear and hydraulic plants for April 1995 through September 1995. The

fossil generation ranged from a high of 46% to a low of 25%. The nuclear generation ranged from a high of 74% to a low of 53%. The percentage of generation by hydro ranged from 1% to 3%. This information is included in **Exhibit No. 3.**

The Staff also collected and reviewed certain Generation Statistics of Major Plants for the 6 months ending September 30, 1995. These are presented on **Exhibit No. 4.** This Exhibit shows the Company's major plants by name, type of fuel used, cost in cents per kilowatt-hour to operate and total megawatt-hours generated for the period. The nuclear fueled Oconee Station was lowest in cost at 0.54 cents per kilowatt-hour. The highest amount of generation was 9,737,693 megawatt-hours which was produced at the Catawba Station.

Utilities Department **Exhibit No. 5** shows a comparison of the Company's original retail megawatt-hour (MWH) estimated sales to the actual sales for the six month period from April 1995 through September 1995. The original projections ranged from an over-estimate of 2.26% in April 1995 to an under-estimate of 6.93% in August 1995 with a total under-estimate for the period of 3.66%.

Utilities Department **Exhibit No. 6** shows a comparison for the months of April 1995 through September 1995 of the Company's original fuel cost projections to the costs actually experienced. The original projections ranged from an over-estimate of 8.83% for September 1995 to an under estimate of 12.58% for May 1995. The difference between actual and original projection of these fuel costs is further delineated graphically on Utilities Department Exhibit No. 7.

**ON-SITE INSPECTION OF COMPANY'S COAL QUALITY SAMPLING TECHNIQUES**

The Company's fuel sampling procedure for coal consists of identification of each train car by specific shipper, point of origin and producer. A sample is taken from each car while unloading and is then crushed and placed in a sealed container. The sample is then sent to the laboratory and analyzed for moisture, ash, BTU and sulfur content. The results of this testing are used to determine the actual price the Company will pay for the coal it received. The price could vary from the contracted price depending upon whether the quality of the coal, such as BTU content, is higher or lower than the level stipulated in the agreement. This cost does not include any non-fuel cost or coal handling cost at the generating plant. Staff has observed this procedure for fuel sampling and has found this procedure to be adequate at this time.

**REVIEW OF THE COMPANY'S METHODOLOGY USED TO ESTIMATE FUEL COSTS**

Staff reviewed the Company's methodology used to estimate fuel costs for this period. Total generation is developed by System Planning, and system sales and South Carolina retail sales are obtained from the Company's Forecasting Department. First the nuclear generation for each unit is estimated for each month in the six month period after considering any scheduled outages. Secondly hydro generation is estimated based on median hydro. Next a small amount of generation is estimated from combustion turbines and also a

small amount of purchased power is included. The balance of the generation comes from the Company's coal stations.

The generation is then priced, generally using current fuel costs. If a nuclear unit is being refueled, costs expected after the refueling are used for that unit.

**REVIEW OF THE COMPANY'S CURRENTLY APPROVED RETAIL ADJUSTMENT FOR FUEL COSTS TARIFF**

The Staff has reviewed the Company's currently approved Retail Adjustment for Fuel Costs Tariff, **Exhibit No. 8**, and determined that it has performed as intended and continues to be an adequate methodology for calculating the appropriate fuel costs.

**HISTORY OF THE CUMULATIVE RECOVERY ACCOUNT**

**Exhibit No. 9** is a history of the cumulative recovery account.

**CALCULATION OF BASE RATE FUEL COST COMPONENT FOR DECEMBER 1995 THROUGH MAY 1996.**

Utilizing the currently projected sales and fuel cost figures for the period December 1995 through May 1996 and including the projected over-recovered balance in the cumulative recovery account as of November 1995 of $841,939 (See Accounting Exhibit G) the average fuel expense is estimated to be 1.0021 ¢/KWH. The Commission has consistently expressed its expectation that the Company would exercise all reasonable prudence and efficiency in its fuel purchasing practices and aggressively control the operation and maintenance of their

production facilities to assure the most reasonable fuel costs possible. The Commission has directed the Staff to monitor the Company's plant operations and fuel purchasing to ensure that any inefficiency or negligent practice is brought to their attention. **Exhibit No. 10** is a table of Projections of the Cumulative Recovery Account for various fuel base levels for the six month period ending May 1996. Also indicated in the table are the projected results using the current fuel base component and the Company's proposed factor of 1.0000 ¢/KWH.

DUKE POWER COMPANY

POWER PLANT PERFORMANCE DATA (%) REPORT

| UNIT CAPACITY FACTOR | MW RATING | LIFE TIME | YEAR 1991 | YEAR 1992 | YEAR 1993 | YEAR 1994 | APR 1995 | MAY 1995 | JUN 1995 | JUL 1995 | AUG 1995 | SEP 1995 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CATAWBA 1 | 1129 | | 67 | 71 | 77 | 99 | 102 | 92 | 101 | 100 | 100 | 101 |
| CATAWBA 2 | 1129 | | 74 | 94 | 83 | 78 | 89 | 91 | 100 | 100 | 100 | 101 |
| MCGUIRE 1 | 1129 | | 69 | 76 | 56 | 69 | 100 | 99 | 90 | 80 | 97 | 83 |
| MCGUIRE 2 | 1129 | | 96 | 68 | 69 | 87 | 81 | 101 | 98 | 99 | 97 | 99 |
| OCONEE 1 | 846 | | 81 | 84 | 88 | 82 | 88 | 71 | 101 | 100 | 99 | 99 |
| OCONEE 2 | 846 | | 100 | 80 | 84 | 83 | 90 | 36 | 102 | 100 | 100 | 99 |
| OCONEE 3 | 846 | | 75 | 73 | 99 | 76 | 102 | 100 | 19 | 24 | 96 | 99 |
| TOTAL | 7054 | | 80 | 78 | 78 | 82 | 93 | 86 | 89 | 88 | 99 | 97 |

| EQUIVALENT AVAILABILITY FACTOR | MW RATING | APR 1995 | MAY 1995 | JUN 1995 | JUL 1995 | AUG 1995 | SEP 1995 | OCT 1995 | NOV 1995 | DEC 1995 | JAN 1996 | FEB 1996 | MAR 1996 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BELEWS CREEK 1 | 1120 | 70 | 96 | 97 | 99 | 99 | 8 | | | | | | |
| BELEWS CREEK 2 | 1120 | 29 | 00 | 32 | 99 | 100 | 100 | | | | | | |
| CLIFFSIDE 5 | 562 | 00 | 00 | 65 | 97 | 99 | 93 | | | | | | |
| MARSHALL 3 | 660 | 85 | 99 | 99 | 99 | 93 | 73 | | | | | | |
| MARSHALL 4 | 660 | 92 | 94 | 99 | 98 | 99 | 99 | | | | | | |
| TOTAL | 4122 | 55 | 57 | 76 | 99 | 98 | 70 | | | | | | |
| CATAWBA 1 | 1129 | 99 | 90 | 100 | 99 | 99 | 99 | | | | | | |
| CATAWBA 2 | 1129 | 88 | 91 | 99 | 99 | 99 | 99 | | | | | | |
| MCGUIRE 1 | 1129 | 100 | 100 | 92 | 84 | 100 | 88 | | | | | | |
| MCGUIRE 2 | 1129 | 79 | 100 | 98 | 100 | 99 | 100 | | | | | | |
| OCONEE 1 | 846 | 87 | 71 | 99 | 99 | 99 | 99 | | | | | | |
| OCONEE 2 | 846 | 91 | 37 | 99 | 99 | 99 | 99 | | | | | | |
| OCONEE 3 | 846 | 100 | 99 | 19 | 25 | 96 | 99 | | | | | | |
| TOTAL | 7054 | 92 | 86 | 88 | 88 | 99 | 97 | | | | | | |

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UTILITIES DEPARTMENT
EXHIBIT NO. 1

DUKE POWER COMPANY

NUCLEAR UNIT OUTAGE REPORT

| NO. | DATE OFF | DATE ON | HOURS/TYPE* | REASON FOR OUTAGE AND CORRECTIVE ACTION |
|---|---|---|---|---|
| | | | | **Oconee 1** |
| 1. | 04/27/95 | 05/09/95 | 304.52/F | Evaluation of control rod trip times indicated increase in trip times. Control rod drives were repaired/replaced. |
| | | | | **Oconee 2** |
| 1. | 04/14/95 | 04/16/95 | 38.58/F | Generator protective relay actuated too early. Design and implementation of modification to replace timer for all three Oconee units. |
| 2. | 05/04/95 | 05/23/95 | 457.75/F | Steam expansion joint mechanical failure. All expansion joints replaced. |
| | | | | **Oconee 3** |
| 1. | 06/06/95 | 07/13/95 | 888.00/S | Refueling and maintenance outage. |
| 2. | 07/13/95 | 07/18/95 | 120.00/F | Valve maintenance and testing. |
| 3. | 07/18/95 | 07/20/95 | 48.00/F | Marbo plug retrieval problem associated with low pressure service water maintenance. Marbo plug replaced. |
| 4. | 07/20/95 | 07/23/95 | 51.50/F | Valve packing leak. Valve repacked. |
| 5. | 07/23/95 | 07/23/95 | 1.87/S | Post refueling outage testing. |
| 6. | 08/14/95 | 08/15/95 | 24.07/F | Control rod group five dropped into position from 100% power. Control rod group five programmer control replaced and returned to vendor for analysis. |

DUKE POWER COMPANY

NUCLEAR UNIT OUTAGE REPORT
-CONTINUED-

| NO. | DATE OFF | DATE ON | HOURS/TYPE* | REASON FOR OUTAGE AND CORRECTIVE ACTION |
|---|---|---|---|---|
| | | | | **McGuire 1** |
| 1. | 06/28/95 | 07/05/95 | 107.84/F | Diesel generator turbocharger bearing failed. All diesel generator turbochargers replaced/repaired. |
| 2. | 09/27/95 | 09/30/95 | 68.90/F | Failure of valve control circuit. All fuses and electrical controls associated with this function checked/replaced. |
| | | | | **McGuire 2** |
| 1. | 03/31/95 | 04/06/95 | 137.83/F | Residual Heat Removal Control Valve had a pinhole leak in the valve casing. Valve was replaced. |
| | | | | **Catawba 1** |
| 1. | 05/26/95 | 05/27/95 | 17.22/F | Blocked vent line resulted in incorrect oil level indication. Vent line was replaced and oil levels inspected and adjusted. |
| | | | | **Catawba 2** |
| 1. | 04/27/95 | 05/01/95 | 99.00/F | Auxiliary relay on reactor trip breaker did not operate correctly. Auxiliary relay was replaced. |
| 2. | 05/01/95 | 05/03/95 | 42.85/F | Manual reactor trip due to loss of feedwater flow. Condensate valves were re-aligned. |

F=Forced S=Scheduled

DUKE POWER COMPANY

FOSSIL UNIT OUTAGE REPORT
(100 HOURS OR GREATER DURATION)

| MONTH | NAME | HRS/TYPE* | REASON FOR OUTAGE AND CORRECTIVE ACTION |
|---|---|---|---|
| APR 95 | Belews Creek 1 | 108/F | Repair main steam piping to turbine stop valve. |
| | Belews Creek 2 | 343/S | Boiler inspection outage; work in reheat, superheater, waterwall. |
| | Belews Creek 2 | 168/F | Rewind hp generator rotor due to ground and shorts in rotor. |
| MAY 95 | Belews Creek 2 | 744/F | Rewind hp generator rotor due to ground and shorts in rotor. |
| JUN 95 | Belews Creek 2 | 361/F | Rewind hp generator rotor due to ground and shorts in rotor. |
| | Belews Creek 2 | 172/F | To repair reheater tube leak; erosion between 1st and 2nd bundles. |
| JUL 95 | None | | |
| AUG 95 | None | | |
| SEP 95 | Belews Creek 1 | 672/S | Scheduled rewind of hp generator stator with rigi-flex water cooled stator. |

Type* S-scheduled F-forced

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DUKE POWER COMPANY
GENERATION MIX

| MONTH | | PERCENTAGE | | |
|---|---|---|---|---|
| | | FOSSIL | NUCLEAR | HYDRO |
| APRIL | 95 | 25 | 74 | 1 |
| MAY | | 35 | 64 | 1 |
| JUNE | | 37 | 60 | 3 |
| JULY | | 46 | 53 | 1 |
| AUGUST | | 43 | 55 | 2 |
| SEPTEMBER | | 29 | 70 | 1 |

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EXHIBIT NO. 4

DUKE POWER COMPANY

GENERATION STATISTICS OF MAJOR PLANTS

APRIL 1, 1995 - SEPTEMBER 30, 1995

| PLANT | TYPE FUEL | AVERAGE FUEL COST (¢/kwh) | GENERATION (MWH) |
|---|---|---|---|
| Lee | Coal | 2.14 | 355,952 |
| Allen | Coal | 1.67 | 1,964,788 |
| Marshall 3 & 4 | Coal | 1.62 | 6,755,344 |
| Cliffside 5 | Coal | 1.57 | 1,161,320 |
| Belews Creek 1 & 2 | Coal | 1.49 | 5,666,714 |
| McGuire | Nuclear | 0.59 | 9,294,410 |
| Catawba | Nuclear | 0.58 | 9,737,693 |
| Oconee | Nuclear | 0.54 | 9,420,516 |

DUKE POWER COMPANY

SOUTH CAROLINA RETAIL COMPARISON
OF PROJECTED TO ACTUAL FUEL COSTS
[CENTS PER KWH]

| | | 1995 | | | | | |
|---|---|---|---|---|---|---|---|
| | | APR | MAY | JUN | JUL | AUG | SEP |
| [1] | ORIGINAL PROJECTION | 0.8381 | 0.9471 | 1.1228 | 1.1863 | 1.0496 | 0.9097 |
| [2] | ACTUAL EXPERIENCE | 0.8928 | 1.0834 | 1.0680 | 1.2261 | 1.1035 | 0.8359 |
| [3] | AMOUNT IN BASE | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| [4] | VARIANCE FROM ACTUAL [1-2]/[2] | -6.13% | -12.58% | 5.13% | -3.25% | -4.88% | 8.83% |



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EXHIBIT NO. 7

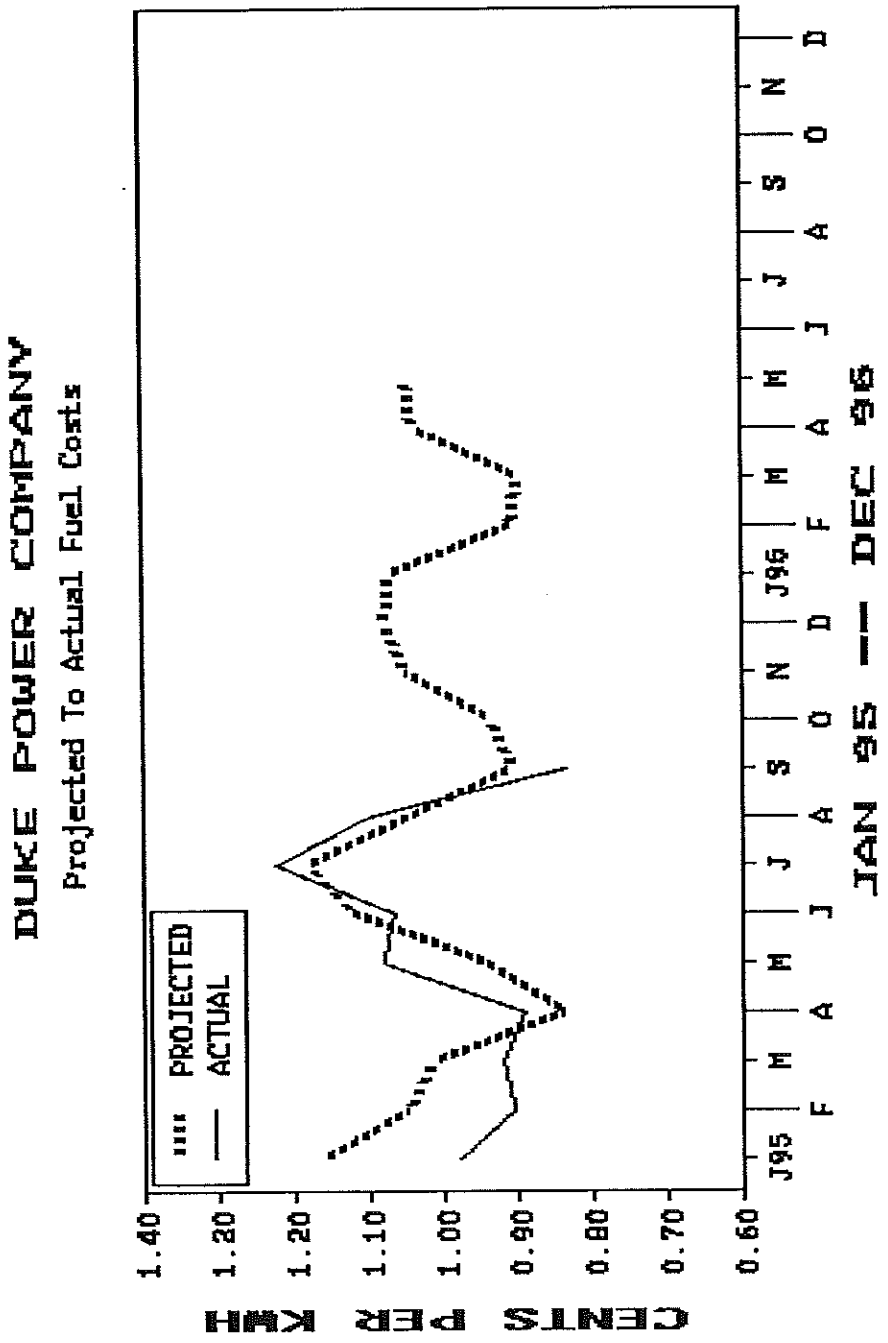

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EXHIBIT NO. 8

# ADJUSTMENT FOR FUEL COSTS

## APPLICABILITY

This adjustment is applicable to and is a part of the Utility's South Carolina retail electric rate schedules.

The Public Service Commission has determined that the costs of Fuel in an amount to the nearest one ten-thousandth of a cent, as determined by the following formula, will be included in the base rates to the extent determined reasonable and proper by the Commission for the succeeding six months or shorter period:

$$F = \frac{E}{S} + \frac{G}{S_1}$$

Where:

F = Fuel cost per kilowatt-hour included in base rate, rounded to the nearest one ten-thousandth of a cent.

E = Total Projected system Fuel costs:

(A) Fuel consumed in the Utility's own plants and the Utility's share of fuel consumed in jointly owned or leased plants. The cost of fossil fuel shall include no items other than those listed in Account 151 of the Commission's Uniform System of Accounts for Public Utilities and Licensees. The cost of nuclear fuel shall be that as shown in Account 518 excluding rental payments on leased nuclear fuel and except that, if Account 518 also contains any expense for fossil fuel which has already been included in the cost of fossil fuel, it shall be deducted from this account.

Plus

(B) Purchased power fuel costs such as those incurred in unit power and Limited Term power purchases where the fuel costs associated with energy purchased are identifiable and are identified in the billing statement.

Plus

(C) Interchange power fuel costs such as Short Term, Economy and other where the energy is purchased on economic dispatch basis.

Energy receipts that do not involve money payments such as Diversity energy and payback of storage energy are not defined as purchased or interchange power relative to this fuel calculation.

Minus

(D) The cost of fuel recovered through intersystem sales including the fuel costs related to economy energy sales and other energy sold on an economic dispatch basis.

Energy deliveries that do not involve billing transactions such as Diversity energy and payback of storage are not defined as sales relative to this fuel calculation.

S = Projected system kilowatt-hour sales excluding any intersystem sales.

G = Cumulative difference between jurisdictional fuel revenues billed and fuel expenses at the end of the month preceding the projected period utilized in E and S.

$S_1$ = Projected jurisdictional kilowatt-hour sales for the period covered by the fuel costs included in E.

The appropriate revenue-related tax factor is to be included in these calculations.

The fuel cost F as determined by SCPSC Order No. 95-1120 for the period June 1995 through November 1995 is 1.000 cent per kilowatt-hour.

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EXHIBIT NO. 9

**DUKE POWER COMPANY**
**HISTORY OF CUMULATIVE RECOVERY ACCOUNT**

| PERIOD ENDING | OVER (UNDER)$ |
|---|---|
| MAY 1979 - Automatic Fuel Adjustment in Effect | |
| November 1979 | 1,398,442 |
| May 1980 | 11,322,948 |
| November 1980 | 4,588,331 |
| May 1981 | (5,760,983) |
| November 1981 | (13,061,000) |
| May 1982 | (14,533,577) |
| November 1982 | (4,314,612) |
| May 1983 | 20,915,390 |
| November 1983 | 14,192,297 |
| May 1984 | 18,245,503 |
| November 1984 | 14,478,363 |
| May 1985 | 2,551,115 |
| November 1985 | (553,465) |
| May 1986 | (1,318,767) |
| November 1986 | (29,609,992) |
| May 1987 | (27,241,846) |
| November 1987 | (29,329,168) |
| May 1988 | (9,373,768) |
| November 1988 | 6,544,914 |
| May 1989 | 6,067,739 |
| November 1989 | 11,372,399 |
| May 1990 | 15,421,968 |
| November 1990 | 2,939,303 |
| May 1991 | 17,068,483 |
| November 1991 | 21,265,000 |
| May 1992 | 21,080,856 |
| November 1992 | 11,553,801 |
| May 1993 | 16,959,555 |
| November 1993 | 221,606 |
| May 1994 | 6,609,897 |
| November 1994 | 1,037,659 |
| May 1995 | 5,088,619 |

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EXHIBIT NO. 10

DUKE POWER COMPANY

SOUTH CAROLINA RETAIL
PROJECTIONS OF THE CUMULATIVE RECOVERY ACCOUNT
FOR THE SIX MONTH PERIOD ENDING
MAY 1996

| | FUEL BASE | PROJECTED CUMULATIVE OVER\(UNDER) RECOVERY [$] |
|---|---|---|
| | .8000 | (20,921,735) |
| | .8250 | (18,334,183) |
| | .8500 | (15,746,632) |
| | .8750 | (13,159,080) |
| | .9000 | (10,571,529) |
| | .9250 | ( 7,983,977) |
| | .9500 | ( 5,396,426) |
| | .9750 | ( 2,808,874) |
| CURRENT FACTOR >> | 1.0000 | ( 221,323) |
| COMPANY PROPOSED >> | 1.0000 | ( 221,323) |
| ZERO UNDER >> | 1.0021 | ( 3,968) |
| ZERO OVER >> | 1.0022 | 6,382 |
| | 1.0250 | 2,366,229 |
| | 1.0500 | 4,953,780 |
| | 1.0750 | 7,541,332 |
| | 1.1000 | 10,128,883 |
| | 1.1250 | 12,716,434 |
| | 1.1500 | 15,303,986 |
| | 1.1750 | 17,891,537 |
| | 1.2000 | 20,479,089 |